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EXAMINER OREILLY, PATRICK F				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/797,602

Applicant(s)

EISENHOUR, RONALD S.

Examiner

Patrick F. O'Reilly III

Art Unit

3749

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-55 is/are pending in the application.
- 4a) Of the above claim(s) 31-51, 54 and 55 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 27 is/are allowed.
- 6) ☒ Claim(s) 1-3, 12-19, 24-26 and 52 is/are rejected.
- 7) ☒ Claim(s) 4-8, 10, 11, 20-23 and 53 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Final Drawing Review (PTO-849)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date See Continuation Sheet
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :3/11/2004; 8/11/2005; 5/19/2009.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-30 and 52-53, drawn to method/program for automatically adjusting the flow rate of engine coolant through a heater core in an automobile, classified in class 237, subclass 2A.
 - II. Claims 31-37 and 54-55, drawn to a method for automatically controlling the climate in the cabin of an automobile, classified in class 237, subclass 8A.
 - III. Claims 38-48 and 49-51, drawn to coolant flow control devices, classified in class 237, subclass 12.3B.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are directed to related processes. The related inventions are distinct if:

(1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants.

See MPEP § 806.05(j). In the instant case, the inventions claimed in groups I and II can have a materially different design, mode of operation, function, or effect. Furthermore, the inventions as claimed do not encompass overlapping subject matter and there is nothing of record to show them to be obvious variants.

3. Inventions II and III are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another and materially different apparatus or by hand, or (2) the apparatus as claimed can be used to

practice another and materially different process. (MPEP § 806.05(e)). In this case, the method of group II, encompassing claims 31-37 and 54-55, can be practiced in real time by an apparatus that is materially different from the apparatuses recited in claims 38-48 and 49-51 (group III), namely one that does not include a memory device.

4. Inventions I and III are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another and materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the method of group I, encompassing claims 1-30 and 52-53, can be practiced in real time by an apparatus that is materially different from the apparatuses recited in claims 38-48 and 49-51 (group III), namely one that does not include a memory device.

5. Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given above and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

- (a) the inventions have acquired a separate status in the art in view of their different classification;
- (b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;
- (c) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);

(d) the prior art applicable to one invention would not likely be applicable to another invention;

(e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a invention to be examined and (ii) identification of the claims encompassing the elected invention.

If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.

6. During a telephone conversation with Glenn Law, Attorney for Applicant, on May 14, 2009 a provisional election was made without traverse to prosecute the invention of group I, claims 1-30 and 52-53. Affirmation of this election must be made by applicant in replying to this Office action. Claims 31-51 and 54-55 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Information Disclosure Statement

7. The information disclosure statements (IDSs) submitted on March 11, 2004, August 11, 2005, and May 19, 2009 are acknowledged. The submissions are in compliance with the provisions of 37 C.F.R. § 1.97 and 37 CFR § 1.98 and, therefore, the references therein have been considered.

Drawings

8. The drawings are objected to because the lineweights employed in Figure 6 are not

uniform and, therefore, do not satisfy the requirements of 37 CFR 1.84(l).

9. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

10. The disclosure is objected to because of the following informalities:

On page 9 of the specification, in line 3 of the continuation of paragraph [0029], a period should be inserted after the reference to “Fig. 7”.

On page 11 of the specification, in line 3 of the continuation of paragraph [0035], the examiner believes that the word “drops” should be changed to the word “rises”.

On page 11 of the specification, in line 11 of the continuation of paragraph [0035], the examiner believes that the word “drops” should be changed to the word “rises”.

On page 16 of the specification, in line 7 of paragraph [0050], the examiner believes that the reference to the dates “February 26-29, 2996” should be corrected to read: “February 26-29, 1996”.

On page 20 of the specification, in line 4 of paragraph [0060], the word “air” should be inserted between the word “hot” and the word “will”.

On page 20 of the specification, in line 1 of paragraph [0061], the phrase “to practicing the invention” should be corrected to read: “for practicing the invention”.

On page 21 of the specification, in line 2 of the continuation of paragraph [0061], reference character “100” is used to denote the “memory”. However, reference character “100” is also used to denote the “electronic processor” throughout the disclosure. The examiner believes that the reference character corresponding to the “memory” should be “150” in lieu of “100”.

On page 22 of the specification, in line 13 of paragraph [0064], the extra period at the end of this line is superfluous and therefore, should be deleted.

Appropriate correction is required.

Claim Objections

11. Claim 21 is objected to because of the following informality: in line 3 of this claim, the word “thorough” should be changed to the word “through”. Appropriate correction is required.
12. Claim 22 is objected to because of the following informality: in line 3 of this claim, the word “thorough” should be changed to the word “through”. Appropriate correction is required.
13. Claim 27 is objected to because of the following informalities: (a) in line 16 of this claim, the phrase “automatically measured temperature of coolant” should be corrected to read:

“automatically measuring the temperature of coolant before the coolant enters the heater core”; (b) in line 17 of this claim, the phrase “automatically measured temperature of air” should be corrected to read: “automatically measuring the temperature of air before the air passes through the heater core”; and (c) in line 19 of this claim, the phrase “automatically determined temperature” should be corrected to read: “automatically measured temperature”. Appropriate correction is required.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. **Claims 1-3, 9, 12-19, 24-26, and 52** are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent No. JP 62055217 A (“JP ‘217”) in view of Smith, Jr. et al. (US 2,156,317). These two references, when considered together, teach all of the elements recited in **claims 1-3, 9, 12-19, 24-26, and 52** of this application.

16. In particular, claim 1 of this application is obvious when the JP ‘217 reference is viewed in light of Smith, Jr. et al. The JP ‘217 reference discloses the invention substantially as claimed, including: automatically determining a heat quantity of a heater core (heat-exchanger 6) based upon the determined entering coolant (engine cooling water) flow rate and the entering coolant (engine cooling water) temperature as measured by sensor (4) and a heat-exchanging amount of the heater core (heat-exchanger 6) based on the temperature of the air exiting the heater core

(desired blow-off air temperature); and automatically increasing the flow rate of the coolant (engine cooling water) by modulating coolant control valve (5) to a second flow rate higher than the first flow rate if the heat-exchanging amount is greater than the first predetermined heat quantity of the heater core (6). Refer to JP '217, Figure 3; also refer to attached English abstract.

However, claim 1 of this application further discloses that the flow rate of the coolant is controlled in accordance with an automatically determined temperature difference between the temperature of coolant at a first flow rate before the coolant enters a heater core and a temperature of air exiting the heater core. The JP '217 reference does not contain this additional limitation.

Smith, Jr. et al., although, teaches that, in an air conditioning system, the heat-exchanging amount of a coil depends upon the temperature difference between the entering water temperature of the coil (12) and the leaving air temperature of the coil (b). See Smith, Jr. et al., sole figure; page 2, left-hand column, lines 31-75, and right-hand column, lines 1-14. Therefore, when the JP '217 reference is viewed in light of Smith, Jr. et al., it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the coolant flow control method of JP '217 by determining the heat-exchanging amount of the heater core in accordance with the temperature difference between the entering coolant temperature of the heater core and the leaving air temperature of the core, as taught by Smith, Jr. et al., in order to ensure that the vehicle passenger compartment is adequately heated, thereby facilitating the comfort of the passengers.

17. In regard to claims 2 and 3, the JP '217 reference further discloses that the temperature difference is determined by measuring the temperature of the coolant (engine cooling water)

entering the heater core (heat-exchanger 6) via water temperature sensor (4). Refer to JP '217, Figure 3; also refer to attached English abstract. The JP '217 reference, as modified by Smith, Jr. et al., does not explicitly teach measuring or estimating the temperature of the air exiting the heater core. However, the examiner takes official notice that it is notoriously old and well known in the art to measure or estimate the temperature of the air exiting the heater core so that the temperature can be used to assess the performance characteristics of the heater core. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the coolant flow control method of JP '217 in view of Smith, Jr. et al. by measuring or estimating the temperature of the air exiting the heater in order to enable the temperature value to be utilized in calculations that quantify the performance characteristics of the heater core.

18. In regard to claim 9, the examiner takes official notice that it is notoriously old and well known in the art to decrease the coolant flow rate after the coolant has been operated at an increased coolant flow rate for a predetermined period of time. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the coolant flow control method of JP '217 in view of Smith, Jr. et al. by further decreasing the flow rate of the coolant from the second flow rate to a third flow rate lower than the second flow rate after the coolant flows at the second flow rate for a predetermined period of time, in order to enable the energy consumption of the water pump to be minimized.

19. In regard to claim 12, the JP '217 reference further discloses automatically adjusting the flow rate of engine coolant through a heater core (heat-exchanger 6); and providing heated air to the cabin from the heater core (heat-exchanger 6). See JP '217, Figure 3; also refer to attached

English abstract. Therefore, the JP '217 reference in view of Smith, Jr. et al. also renders the limitations set forth in this claim obvious.

20. In regard to claims 13-19 and 24-26, the examiner takes official notice that it is notoriously old and well known in the art to estimate the temperature of the air exiting the heater core based upon a myriad of common performance parameters, including: the percentage of the total conditioned air introduced into the cabin, the blower speed, the mass flow rate of air passing through the heater core, empirical data, a predetermined ratio of the enthalpy per degree of coolant flowing through the heater core and the enthalpy per degree of air flowing through the heater core, the measured temperature of air entering the heater core, the measured temperature of coolant entering the heater core, and the heater core distribution factor. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the coolant flow control method of JP '217 in view of Smith, Jr. et al. by estimating the temperature of the air exiting the heater based upon any one, or a combination of the performance parameters listed above, in order to enable the temperature value to be utilized in calculations that quantify the performance characteristics of the heater core.

21. Moreover, claim 52 of this application is obvious when the JP '217 reference is viewed in light of Smith, Jr. et al. The JP '217 reference discloses the invention substantially as claimed, including: automatically determining a heat quantity of a heater core (heat-exchanger 6) based upon the determined entering coolant (engine cooling water) flow rate and the entering coolant (engine cooling water) temperature as measured by sensor (4) and a heat-exchanging amount of the heater core (heat-exchanger 6) based on the temperature of the air exiting the heater core (desired blow-off air temperature); and automatically increasing the flow rate of the coolant

(engine cooling water) by modulating coolant control valve (5) to a second flow rate higher than the first flow rate if the heat-exchanging amount is greater than the first predetermined heat quantity of the heater core (6). Refer to JP '217, Figure 3; also refer to attached English abstract.

However, claim 52 of this application further discloses that the flow rate of the coolant is controlled in accordance with an automatically determined temperature difference between the temperature of coolant at a first flow rate before the coolant enters a heater core and a temperature of air exiting the heater core. The JP '217 reference does not contain this additional limitation.

Smith, Jr. et al., although, teaches that, in an air conditioning system, the heat-exchanging amount of a coil depends upon the temperature difference between the entering water temperature of the coil (12) and the leaving air temperature of the coil (b). See Smith, Jr. et al., sole figure; page 2, left-hand column, lines 31-75, and right-hand column, lines 1-14. Therefore, when the JP '217 reference is viewed in light of Smith, Jr. et al., it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the coolant flow control method of JP '217 by determining the heat-exchanging amount of the heater core in accordance with the temperature difference between the entering coolant temperature of the heater core and the leaving air temperature of the core, as taught by Smith, Jr. et al., in order to ensure that the vehicle passenger compartment is adequately heated, thereby facilitating the comfort of the passengers.

The JP '217 reference, as modified by Smith, Jr. et al., does not explicitly teach that the steps of the coolant flow control method are implemented using a machine-readable program code. However, the examiner takes official notice that it is notoriously old and well known in

the art to implement a vehicle air conditioning/heating control method using a machine-readable program code for the purpose of enabling the method steps to be automatically implemented in a quick and efficient manner. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the coolant flow control method of JP '217 in view of Smith, Jr. et al. by implementing the method steps using a machine-readable program code, in order to enable the method steps to be automatically implemented in a quick and efficient manner.

Allowable Subject Matter

22. **Claims 4-8, 10-11, 20-23, and 53** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
23. **Claim 27** would be allowable if rewritten or amended to overcome the claim objections, set forth in this Office action.
24. **Claims 28-30** are allowable over the prior art.

Conclusion

25. See attached form PTO-892 for additional pertinent prior art, which was not directly relied upon in this action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick F. O'Reilly III whose telephone number is (571) 272-3424. The examiner can normally be reached on Monday through Friday, 8:30 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven B. McAllister can be reached on (571) 272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Patrick F. O'Reilly III/
Examiner, Art Unit 3749

/Steven B. McAllister/
Supervisory Patent Examiner, Art Unit 3749